

1 WE CLAIM:

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3 1. A pleated shade or Venetian blind
4 assembly capable of height adjustment, comprising, in
5 combination:

6 a) an upper elongated support,

7 b) a lower elongated member that is
8 manually adjustable up and down,

9 c) primary lines extending through shade
10 pleats or blind slats to suspend said bottom elongated
11 member,

12 d) primary rotors at said top elongated
13 support to wind or engage said primary lines,

14 e) at least one secondary line having
15 operative connection to said primary lines,

16 f) and means acting on said secondary line
17 or lines for counterbalancing suspension force exerted
18 on said primary lines at different shade or blind
19 height adjusted levels,

20 g) said means including dual rotary members
21 exerting tensioning force on said secondary line or
22 lines,

23 h) said means including a spring coupled to
24 said dual rotary members and exerting force tending to
25 entrain said secondary line or lines about said dual

1 rotary members, for storage on at least one of the
2 members,

3 i) said secondary line feeding between said
4 members to assist in said spring exertion of force.

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7 2. The combination of claim 1 wherein the
8 second line criss-crosses onto the second member in the
9 form of a drum, for assisting spring exertion of force
10 acting to hold the shade or blind in selected height
11 position.

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14 3. The combination of claim 1 including
15 additional rotors entrained by the primary line, to
16 assist in counterbalancing the weight of the shade.

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19 4. The combination of claim 1 wherein said
20 multiple primary rotors are pulleys in said upper
21 support.

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1 5. The combination of claim 1 wherein as
2 the spring is transferred from the rotary member A onto
3 rotary member B, the secondary line unwinds from a
4 rotary member and a primary line traversing across or
5 over first and fourth pulleys and across or over third
6 and second pulleys, then through an aperture in the
7 head rail to suspend the shade or blind, said pulleys
8 defined by said primary rotors.

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11 6. The combination of claim 5 wherein
12 another primary traverses across or over first and
13 fourth pulleys, and also across or over second and
14 third pulleys, and then passes through an aperture in
15 the head rail and to suspend the shade or blind, said
16 primary lines having junction connection to said
17 secondary line.

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20 7. The combination of claim 1 wherein the
21 cordless shade or blind is raised as one rotary member
22 turns counterclockwise and as another rotary member
23 turns clockwise, the spring being windingly transferred
24 from the rotary member to the other, one primary line
25 traversing first and fourth pulleys, and then

1 traversing second and third pulleys, to connect with
2 the secondary line.

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5 8. The combination of claim 7 wherein the
6 other primary line traverses said second and third
7 pulleys and then traverses the first and fourth pulleys
8 to connect with the secondary line, the secondary line
9 winding into secondary line collecting means at said
10 rotary members.

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13 9. The assembly of claim 8 wherein said
14 first, second, third and fourth pulleys are located in
15 a row at a hollow head rail, whereby each primary line
16 traverses the pulleys in a back and forth relation.

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19 10. The assembly of claim 9 wherein said
20 upper elongated support protectively contains all of
21 said pulleys, members and spring.

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1 11. The assembly of claim 1 wherein said
2 primary lines have first terminals operatively
3 connected to said lower elongated member, below said
4 upper support.

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7 12. The assembly of claim 1 wherein said
8 support is hollow to receive said rotors, said members,
9 and said spring.

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12 13. The combination of claim 1 wherein said
13 spring has S-shaped configuration.

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16 14. The combination of claim 1 wherein said
17 spring winds in a clockwise direction about one of said
18 rotary members, and in a counterclockwise direction
19 about the other of said rotary members.

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22 15. The combination of claim 1 wherein said
23 at least one rotary member has coaxial first and second
24 surface portions, the spring winding about the first
25 portion, and the secondary line winding about the
26 second portion.

1 16. The combination of claim 1 wherein each
2 of the rotary members has coaxial first and second
3 surface portions, the spring winding about the first
4 portions and the secondary line or lines winding about
5 the second portions.

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8 17. The combination of claim 5 including a
9 housing, and posts in the housing supporting the rotary
10 members for free rotation about axes defined by the
11 posts.

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14 18. The combination of claim 6 including
15 structure associated with the posts and rotary members,,
16 for axially positioning the rotary members in the
17 housing.

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20 19. The combination of claim 6 wherein the
21 housing is received in said upper elongated support
22 which is a shade or blind head rail.

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1 20. A collapsible shade or blind assembly
2 capable of height adjustment without use of pull cords,
3 comprising, in combination:
4 a) an upper elongated support,
5 b) a lower elongated member that is
6 manually adjustable up and down,
7 c) primary lines extending through shade
8 pleats or blind slats to suspend said bottom elongated
9 member,
10 d) primary rotors at said top elongated
11 support to entrain said primary lines,
12 e) one secondary line having operative
13 connection to said primary lines,
14 f) and means acting on said secondary line
15 or lines for counterbalancing suspension force exerted
16 on said primary lines at different shade or blind
17 height adjusted levels, said means including rotary
18 structure entraining said secondary line, and a spring
19 operatively connected to said rotary structure to coil
20 and uncoil thereabout as shade or blind height changes.

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23 21. The combination of claim 20 wherein said
24 spring has S-shaped configuration.

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1 22. The combination of claim 20 wherein said
2 primary rotors include four rotors, each primary line
3 entraining at least three of said rotors whereby
4 multiple of said primary lines together entrain at
5 least one rotor.

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8 23. A collapsible shade assembly capable of
9 height adjustment without use of pull cords,
10 comprising, in combination:

- 11 a) an upper elongated support,
12 b) a lower elongated member that is
13 manually adjustable up and down,
14 c) primary lines extending through or
15 proximate the shade to suspend said bottom elongated
16 member,
17 d) primary rotors at said top elongated
18 support to entrain said primary lines,
19 e) at least one secondary line having
20 operative connection to said primary lines,
21 f) and means acting on said secondary line
22 or lines for counterbalancing suspension force exerted
23 on said primary lines at different shade height
24 adjusted levels.

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1 24. The assembly of claim 23 wherein said
2 means includes a rotary member exerting tensioning
3 force on said secondary line or lines.

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6 25. The assembly of claim 23 wherein the
7 number of said secondary line or lines is less than the
8 number of said primary lines.

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11 26. The assembly of claim 24 wherein the
12 number of said secondary line or lines is less than the
13 number of said primary lines.

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16 27. The assembly of claim 23 wherein there
17 is only one secondary line.

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20 28. The assembly of claim 24 wherein there
21 is only one secondary line, and there are between 2 and
22 3 of said primary lines.

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1 29. The assembly of claim 24 wherein said
2 means include a spring or springs acting to urge said
3 rotary member in a direction tending to wind said
4 secondary line or lines on said rotary member.

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7 30. The assembly of claim 29 wherein said
8 upper elongated support defines a channel in which said
9 primary rotor and said means are located.

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12 31. The assembly of claim 23 wherein said
13 connection has a linear path of travel.

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16 32. The assembly of claim 31 wherein said
17 primary rotors are pulleys.

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20 33. The assembly of claim 32 wherein said
21 primary rotors include a first rotor having spacing
22 from said means which exceeds said path of travel for
23 shade height adjustment between uppermost and lowermost
24 positions.

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1 34. The assembly of claim 33 wherein said
2 primary rotors include at least one second rotor over
3 which said primary lines are entrained, and said
4 primary rotors include a third rotor in the form of a
5 pulley over which one of said primary lines is
6 entrained, and a fourth rotor in the form of a pulley
7 over which another of said primary lines is entrained.

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10 35. The assembly of claim 34 wherein said
11 upper elongated support protectively contains all of
12 said primary rotors and said tensioning means.

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15 36. The assembly of claim 23 wherein said
16 primary lines have first terminals operatively
17 connected to said lower elongated member, below said
18 upper support.

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21 37. The assembly of claim 36 wherein said
22 primary lines have second terminals operatively
23 connected to said connection, within said upper
24 support.

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1 38. The assembly of claim 31 including a
2 guide rotor over which a section of said secondary line
3 travels, said section located between said connection
4 and said means, said guide rotor movable axially
5 generally normal to said path of travel.

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8 39. The assembly of claim 23 wherein said
9 means includes a roller device for retaining said
10 secondary line in a selected position or positions
11 corresponding to selected shade height adjustment.

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